Space Weather Forecast

Issued on Saturday 28 September 2024 at 13:22 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with only Common-class flares observed. There are currently eleven sunspot regions on the visible disc, the majority of which are magnetically simple and inactive. The largest of these is in the far southeast of the east and is of moderate magnetic complexity. The next largest region AR3836, also in the southeast disc, underwent decay in its trailing region to leave a magnetically simple region, but with a reasonable number of spots still evident. Another region west of centre disc in the southern hemisphere contains moderate magnetic complexity with slow development in its intermediate and trailing regions, but is largely inactive at this time.

There were no Earth-directed Coronal Mass Ejections (CMEs) observed.

Solar Wind / Geomagnetic Activity: Solar winds were largely indicative of a normal background state, though likely with some minor CME influence from around 28/0700 UTC. Speeds remained at slow-ambient levels, declining from 350km/s to around 300km/s, before rising again to vary between 300-360km/s following the CME arrival. The Interplanetary Magnetic Field was mainly weak, but strengthened to Moderate levels for a time after passage of the CME. The important north-south component was predominantly weakly positive, but after 28/0700 UTC was weak and generally negative in direction. Geomagnetic activity was Quiet (Kp 0-2) throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of isolated Moderate-class flares. New regions are expected to rotate onto the disc during the period.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs are currently expected. The current background solar winds are expected to persist until a possible weak fast wind enhancement occurs, with wind speeds perhaps reaching around 450km/s. The fast wind onset is expected late on Day 1 or during Day 2 (28-29 Sep).

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Met Office Space Weather Forecast

Mainly Quiet (Kp 0-2) geomagnetic conditions are expected. Ongoing CME effects or the onset of any coronal hole fast wind could bring Unsettled to Active (Kp 3-4) intervals during Days 1 and Day 2.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels with just a very slight chance of solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	5	5	1	1
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	50	50	50	50
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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